REMARKS

Claims 1 to 66 are pending. Claims 36 to 43 were withdrawn from consideration.

Applicants confirm their election of the Group II claims 1 to 35 and 44 to 66 with traverse. The Group II claims 1 to 35 are directed to a method a of conducting a treatment and monitoring effectiveness of the treatment and the Group II claims 44 to 66 are directed to a system, comprising a PRB zone to treat a contaminated groundwater. The Group I claims 36 to 43 are directed to a method of monitoring a PRB treatment of a contaminated aqueous medium wherein the treatment can be by the method of the Group II claims or with the system of the Group II claims. Hence, the subject matter of all the claims is sufficiently related that a search of any one Group encompasses a search for the subject matter of the other Group. Section 803 of the MPEP states that "[i]f the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims to distinct or independent inventions." All of the claims could be examined without serious burden in view of their close relationship. In order to avoid unnecessary delay and expense to the applicants and duplicate examination by the Patent Office, it is respectfully requested that the restriction requirement be reconsidered and withdrawn.

The Office Action objected to the specification on the basis of listed informalities. The specification has been amended to address the alleged informalities. TABLE 2 is referred to in the specification text and the data is included in the attached Rule 131 Declaration to show invention prior to the filing date of the Borden et al. reference, which date is prior to the application date of the present application. This application was filed electronically and included the TABLE 2 at the time of electronic submission. The remaining amendments to the specification address clerical errors. The specification amendments should be entered and the objections withdrawn.

Claim 14 has been amended to overcome the objection of the Office Action.

Claims 6 to 8, 52 to 54 and 58 to 66 were rejected under 35 U.S.C. §112, second paragraph. The claims have been amended to address each basis of rejection. The

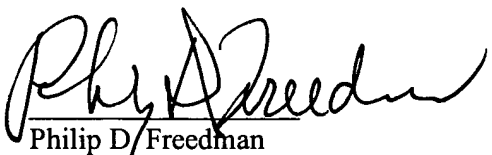
rejection of claims 6 to 8, 52 to 54 and 58 to 66 under 35 U.S.C. §112, second paragraph, should be withdrawn.

Claims 1 to 14, 17, 20 to 35 and 44 to 66 were rejected under 35 U.S.C. §103(a) over Borden et al. and Misquitta; claims 15 to 16 were rejected under 35 U.S.C. §103(a) over Borden et al., Misquitta and Salvo et al.; and claims 18 to 19 were rejected under 35 U.S.C. §103(a) over Borden et al., Misquitta and EPA/600-R-98/095a. The Borden et al. reference is overcome by Applicants' Declaration under 37 C.F.R. §1.131. The Declaration establishes the date of the claimed invention prior to the October 31, 2000 Borden et al. U.S. filing date. The rejections of claims 1 to 14, 17, 20 to 35 and 44 to 66 under 35 U.S.C. §103(a) over Borden et al. and Misquitta; claims 15 to 16 under 35 U.S.C. §103(a) over Borden et al., Misquitta and Salvo et al.; and claims 18 to 19 under 35 U.S.C. §103(a) over Borden et al., Misquitta and EPA/600-R-98/095a should be withdrawn.

In view of the foregoing amendments and remarks, it is respectfully submitted that claims 1 to 66 are allowable. Reconsideration and allowance are requested.

Should the Examiner believe that any further action is necessary in order to place this application in condition for allowance, she is requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please rewrite page 7, paragraph [0033] as follows:

[0033] The unit 28 includes a communications unit, which is electronically coupled to the unit 28 and is capable of transmitting data to a data collection center. The signals may be communicated, for example, from a well transceiver to the data collection system by at least one hardwired communication connection, such as, but not limited to, an electrical conductor, wireless communication connections, such as, but not limited to, radio signals, satellite communications and combinations of wireless and hardwired connections. The communications unit also typically comprises an antenna that is connected to the transceiver, unless the communications unit is hardwired. The data collection center comprises a center communications unit that is capable of receiving signals from the transceiver and a control that analyzes the signals and generates information on groundwater characteristics. The control of the data collection system typically includes a "user friendly" data acquisition software package that transforms information into easy-to-read formats.

Rewrite pages 8 to 9, paragraphs [0037] and [0038] as follows:

EXAMPLE

[0037] In this example, an extended field test was performed to evaluate long-term performance of a PRB test cell containing 100% granular iron. FIG. 1 is a schematic representation of a remediation system 10 that includes the 100% zero-valiant (granular) iron test PRB zone 12 that was installed using a biopolymer slurry construction method as described following. FIG. 2 shows a cross section of a test section of the PRB zone 12 shown in FIG. 1 and FIG. 3 is a cross-section elevation of a typical monitoring well 14.

[0038] Four sensors [12] 16 were deployed in different well locations - one up-gradient of the iron zone, two within the iron zone, and one down-gradient of the iron zone. The

four well locations were along a transect in the direction of site groundwater flow. Monitoring well locations were selected and installed in and around the PRB test zone 12. The PRB test zone 12 was 21 feet in length, approximately 28 inches in width and approximately 34 feet deep. The test zone 12 was formed by first excavating a trench using a backhoe with an extended boom and a 24-inch bucket. A biopolymer slurry was added to the trench and the level of the slurry was maintained during the excavation to maintain trench side stability. The trench was excavated under slurry to the surface of the bedrock.

Rewrite page 10, paragraphs [0043] and [0044] as follows:

[0043] Low-flow purge is an established technique to sample groundwater, According to low-flow purge, groundwater is pumped from subsurface to surface. The process of bringing groundwater to the surface, however, alters many of the monitoring parameters. TABLE 2 compares data collected from both a low-flow purge (purge) and in-well data logging sensor probes for three monitoring events over a three month period. The in-well sensor probes provided continuous data shown in FIGs. 5 to 12.

TABLE 2

WELL	DAY	Method	TEMP	pH	SpCond	DO	ORP
CT-1	45	Purge	11.35	6.21	810	3.54	-121
	@13:30	Insitu	11.94	6.57	816	0.05	-71
	65	Purge	9.40	6.46	793	0.79	-145
	@10:55	Insitu	11:10	6.59	811	0.06	-90
	86	Purge	9.30	6.40	821	3.50	-160
	@10:30	Insitu	10.47	6.61	8.06	0.06	-93
CT-6	45	Purge	11.05	6.31	837	1.55	-147
	@14:00	Insitu	12.13	6.69	685	0.12	-413
	65	Purge	8.73	6.56	820	0.65	-205

	@09:40	Insitu	10.89	6.70	692	0.03	-392
	86	Purge	8.40	6.50	851	2.50	-185
	@10:45	Insitu	8.59	6.70	694	0.04	-369
CT-3	45	Purge	10.90	8.50	461	0.65	-578
CT-2	@10:00	Insitu	13.19	9.71	356	0.15	-744
CT-3	65	Purge	10.0	8.50	461	0.65	-578
CT-2	@13:00	Insitu	11.45	9.83	343	0.15	-737
CT-3	86	Purge	9.60	9.00	524	3.30	-457
CT-2	@12:30	Insitu	10.29	9.93	330	0.14	-710
CT-5	45	Purge	10.89	9.18	427	0.45	-676
CT-4	@11:00	Insitu	13.36	9.70	409	0.06	-752
CT-5	65	Purge	7.24	9.73	438	0.71	-410
CT-4	@13:40	Insitu	11.69	9.90	382	0.08	-696
CT-5	86	Purge	9.60	9.70	469	2.60	-522
CT-4	@12:50	Insitu	10.47	10.10	373	0.08	-739

[0044] TABLE 2 shows multiple daily sampling events. The DAY column indicates days after PRB installation. Accuracy of the in-well (*in situ*) sampling was confirmed by controlled laboratory measurements. In TABLE 2, the high dissolved oxygen (DO) values and the more positive oxidation-reduction potential (ORP) values measured by the low-flow purge method were in error, as a groundwater cannot be highly reducing (<-100 mv ORP) and at the same time be characterized by such high concentrations of dissolved oxygen (~3.5 mg/L). This type of contaminated data is not uncommon when low-flow

purge methods are used. The EXAMPLE illustrates the sampling accuracy advantage of in-well measurements according to the invention.

IN THE CLAIMS:

Please rewrite claims 6 to 8, 14, 52 to 54 and 58 to 66 as follows:

6. (amended) The method of claim 1, wherein the in-well monitoring is conducted by a plurality of in-well sensors arranged substantially along a transect to a PRB zone and the transect is defined by a ± 20 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 5 feet of [a] an open screen interval mid point of each well [open screen interval].

7. (amended) The method of claim 1, wherein the in-well monitoring is conducted by a plurality of in-well sensors arranged substantially along a transect to a PRB zone and the transect is defined by a ± 10 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 3 feet of a mid point of [a] an open screen interval mid point of each well [open screen interval].

8. (amended) The method of claim 1, wherein the in-well monitoring is conducted by a plurality of in-well sensors arranged substantially along a transect to a PRB zone and the transect is defined by a ± 6 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 1 feet of [a] an open screen interval mid point of each well [open screen interval].

14. (amended) The method of claim 1, comprising determining flow of contaminated aqueous medium up-gradient, down-gradient and transecting a PRB zone, placing monitoring wells along the flow of contaminated medium and conducting the in-well monitoring with the monitoring wells, wherein at least one monitoring sensor is placed in-well up-gradient of the PRB zone, at least one monitoring sensor is placed in-well down-gradient of the PRB zone and [ate] at least one monitoring sensor is placed within the PRB zone.

52. (amended) The system of claim 51, wherein the transect is defined by a ± 20 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 5 feet of [a] an open screen interval mid point of each well [open screen interval].

53. (amended) The system of claim 51, wherein the transect is defined by a ± 10 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 3 feet of [a] an open screen interval mid point of each well [open screen interval].

54. (amended) The system of claim 51, wherein the transect is defined by a ± 6 feet wide horizontal plane that transcribes at least one up-stream monitoring well and at least one down-stream well at a level that is ± 1 feet of [a] an open screen interval mid point of each well [open screen interval].

58. (amended) The system of claim 57, further comprising a communication link that interconnects the [data] collector and the monitor, the communication link capable of transmitting the signal to enable a user at the monitor to obtain information concerning the contaminant.

59. (amended) The system of claim [59] 58, wherein the communication link comprises a web connection.

60. (amended) The system of claim [59] 58, wherein the communication link comprises a network.

61. (amended) The system of claim [59] 58, wherein the communication link comprises at least one selected from the group consisting of a phone modem connection, radio communication connection, network communication connection, wireless communication system connection, cellular communication connection, satellite communication connection, web connection[,] and Internet connection [or combinations thereof].

62. (amended) The system of claim [59] 58, further comprising a two-way communicator between the collector and the sensor to permit selection, activation, de-activation, modification, fine-tuning, manipulation or resetting of the sensor.

63. (amended) The system of claim [59] 58, wherein the sensor comprises at least one selected from the group consisting of a vapor sensor, chemical sensor, fiber optics sensor, acoustic wave sensor solid-state sensor, metal oxide sensor[,] and an electrochemical sensor [or combinations thereof].

64. (amended) The system of claim 44, comprising a plurality of sensors emplaced in a respective plurality of wells arranged substantially along a transect to the PRB zone.

65. (amended) The system of claim 44, comprising a plurality of sensors emplaced in a respective plurality of wells arranged substantially along a longitudinal axis of the PRB zone facing flow of the contaminated aqueous medium.

66. (amended) A system, comprising:

a PRB zone to treat a contaminated groundwater; and

a sensor located substantially along a PRB zone transect of flow of the contaminated groundwater from an up-gradient location, across the PRB zone to a down-gradient location.